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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/764,810	01/16/2001	Abraham Mendelson	42390P10140	7766

8791 7590 02/17/2005

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EXAMINER

KIM, HONG CHONG

ART UNIT PAPER NUMBER

2186

DATE MAILED: 02/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/764,810

Applicant(s)

MENDELSON ET AL.

Examiner

Hong C Kim

Art Unit

2186

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 November 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,10-12,20-22 and 30 is/are rejected.
- 7) ☒ Claim(s) 3-9,13-19 and 23-29 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

15h

Detailed Action

1. Claims 1-30 are presented for examination. This office action is in response to the amendment filed on 11/30/2004.
2. Applicants are reminded of the duty to disclose information under 37 CFR 1.56.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-2, 10, 11-12, 20, 21-22 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Peleg et al. (Peleg) US Paten No. 5,381,533 in view of Werner US Paten No. 6,397,296.

As to claims 1, 11, and 21, Peleg discloses an apparatus comprising: a cache management logistics (Fig. 1, Ref. 20, also operation of cache miss and hit and replacement algorithm read on this limitation, furthermore it is inherent to have a controller or management logistics to control a cache in a system including the cache, col. 1 and col. 3 lines 14-28) to control a transfer of a trace (cache memory storing traces of instruction reads on this limitation, col. 1 lines 52-54 and col. 5 lines 56-57); an execution unit (Fig. 1, Ref. 21); a first cache (Fig. 1, Ref. 23) to evict the trace based on a replacement mechanism (replacement algorithm and miss reads on this limitation,

Art Unit: 2186

since a line is needed to evict to free up a space for a new entry, col. 1 line 20 and col. 8 lines 59-65 and col. 9 lines 23-26). Also, it would have been readily appreciated by one of ordinary skill in art that a computer system having caches includes management logistics or a cache controller to control cache operation, such as transfer of data. However, Peleg does not specifically disclose a second cache to receive the evicted trace based on a first number of access to the trace.

Werner discloses a second cache (Fig. 2 Refs. 22 & 24 and col. 4 lines 11-34 & col. 8 line 65 thru col. 9 line 8) to receive the evicted trace based on a first number of access to the trace (col. 8 line 65 thru col. 9 line 8, "the victim cache accepts every displaced cache line" and "the victim filter stores the most frequently accessed cache lines" read on this limitation) for the purpose of increasing the hit rate thereby increasing the system speed.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate a second cache as taught by Werner into the invention of Peleg for the advantages stated above.

As to claims 2, 12, and 22, Werner further discloses a usage counter (col. 8 line 65 thru col. 9 line 8, most frequently accessed reads on this limitation).

As to claims 10, 20, and 30, Werner further discloses a LRU mechanism (col. 2 lines 26-27).

Response to Amendment

4. Applicant's arguments filed on 11/30/2004 have been fully considered but they are not persuasive.

Applicant's argument that the reference does not disclose a cache management logistics is not considered persuasive.

Peleg discloses a cache management logistics (Fig. 1, Ref. 20, also operation of cache miss and hit and replacement algorithm read on this limitation, furthermore it is inherent to have a controller or management logistics to control a cache in a computer system including the cache, col. 1 and col. 3 lines 14-28). Also, it would have been readily appreciated by one of ordinary skill in art that a computer system having caches includes management logistics or a cache controller to control cache operation, such as transfer of data to and from the caches. Additionally one of ordinary skill in art would recognize a computer system including caches includes management logistics or a cache controller to control transfer of data to and from the caches.

Applicant's argument that the reference does not disclose transfer of a trace and a first cache to evict the trace based on a replacement mechanism is not considered persuasive.

Peleg discloses transfer of a trace (cache memory storing traces of instruction reads on this limitation, col. 1 lines 52-54 and col. 5 lines 56-57); an execution unit (Fig. 1, Ref. 21); a first cache (Fig. 1, Ref. 23) to evict the trace based on a replacement mechanism (replacement algorithm and miss reads on this limitation, since a line is

needed to evict to free up a space for a new entry, col. 1 line 20 and col. 8 lines 59-65 and col. 9 lines 23-26).

Applicant's argument that the reference does not disclose eviction mechanism is not considered persuasive.

Werner disclosed eviction mechanism (col. 4 lines 24-32, "a cache line to replace (a victim cache line) in the L0 cache – into the victim cache 32"). Werner further discloses a second cache (Fig. 2 Refs. 22 & 24 and col. 4 lines 11-34 & col. 8 line 65 thru col. 9 line 8) to receive the evicted trace based on a first number of access to the trace (col. 8 line 65 thru col. 9 line 8, "the victim cache accepts every displaced cache line" and "the victim filter stores the most frequently accessed cache lines" read on this limitation).

Applicant's argument that the reference does not disclose evicting is not considered persuasive.

Werner disclosed evicting a line (col. 4 lines 20-27, replace (a victim cache line) in the L0 cache discloses this limitation). In other words, a victim cache stores most frequently used cache lines which are evicted from L0 cache.

Therefore broadly written claims are disclosed by the references cited.

Allowable Subject Matter

5. Claims 3-9, 13-19, and 23-29 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

1. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See attached PTO-892.

2. **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

3. When responding to the office action, Applicant is advised to clearly point out the patentable novelty which he or she thinks the claims present in view of the state of the art disclosed by the references cited or the objections made. He or she must also show how the amendments avoid such references or objections. See 37 C.F.R. ' 1.111(c).

4. When responding to the office action, Applicants are advised to provide the

examiner with the line numbers and page numbers in the application and/or references cited to assist examiner to locate the appropriate paragraphs.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hong C Kim whose telephone number is 703-305-3835. The examiner can normally be reached on M-F 9:00 to 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matt M Kim can be reached on (703) 305-3821. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-3900.

6. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

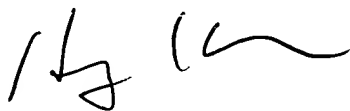
7. **Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks
Washington, D.C. 20231

Application/Control Number: 09/764,810
Art Unit: 2186

Page 8

or faxed to TC-2100:
(703) 872-9306

A handwritten signature in black ink, appearing to be 'H Kim', with a stylized flourish at the end.

H Kim
Primary Patent Examiner
February 8, 2005